Home Energy magazine • 2124 Kittredge St., #95
Berkeley, CA 94704 • Tel: (510) 524-5405
Email: homeenergy@anl.gov • WWW: http://www.homeenergy.org

Chronological Index of *Home Energy* articles Abstracts—1984-1998

Volume 1, No. 1: October/November 1984

The New Breed of Fluorescent Lights

A variety of manufacturers now produce a domesticated fluorescent lamp that screws into standard edison sockets.

Energy Button Fraud!

Manufacturers claim that energy buttons will cut your lighting bill in half. However, the savings are due to lower lighting levels rather than improved efficiency.

Energy-Efficient Refrigerators

It always pays to buy an energy-efficient refrigerator, but the most efficient model is not always the most cost-effective.

Waterbed Energy Use: The Economics of Making Your Bed

By keeping your waterbed covered with a comforter and insulating the sides, you can cut your bed's energy consumption.

Simple Predictions of Insulation Savings: How Good Are They?

An Illinois study found that attic and wall insulation decreased heating energy use by 23 %; however, preliminary heat load calculations gave only ballpark estimates of the actual savings.

How Effective is Insulation?

The actual thermal resistances of insulation may be significantly less than the rated values.

The Formaldehyde Threat

The buildup of formaldehyde vapors in some tightly sealed houses can cause headaches and irritation. There are several ways a homeowner can alleviate the problem.

Volume 2, No. 1: January/February 1985

Strong Medicine

House doctoring is one of the most exciting recent developments in energy conservation. The doctor's prescription consists of much more than just sealing the leaks.

Saving Water Heating Energy

Since the water heating bill is second only to space heating (or cooling), water heaters are prime candidates for conservation measures.

Window Films

Excessive sunshine in the home can be an expensive proposition. Window films can reduce air conditioning costs while providing other significant benefits.

How Europeans Keep Warm

A tour through the Rudolfs' house in Munich provides a glimpse of some very practical energy-saving technologies.

The Kerosene Heater Controversy

Kerosene heaters represent a potential fire and health hazard in the home. Here are the facts behind the kerosene heater controversy.

When Does It Pay to Use a Fireplace?

A typical fireplace burns wood at an efficiency of about 10 %. Some simple retrofits can increase fireplace efficiency and thus make wood heating more economical.

Volume 2, No. 2: March/April 1985

Conservation Capital of the U.S.

Exploring the cutting edge of conservation technology, the Bonneville Power Administration is spending $20 million to weatherize the entire town of Hood River, Oregon.

Air-to-Air Heat Exchangers

Air-to-air heat exchangers are an accepted conservation measure in new, low-energy homes. Are they a practical retrofit in tightly-weatherized existing homes?

Heating System Retrofits

Simple heating retrofits can yield substantial energy savings, since the average efficiency of residential gas furnaces is only 61%.

Heat Pump Water Heaters

This efficient type of water heater uses only half as much energy as a comparable electric resistance heater.

Small Scandals

A timeswitch for a gas water heater can save some energy, but it is only cost-effective in special situations.

Volume 2, No. 3: May/June 1985

Body Coolth

Stripping, sweating and lying in the shade are useful strategies for staying cool in the summer that won't cost you an arm and a leg.

Cutting Cooling Costs Through Greater Efficiency

Today's most efficient central air-conditioners are twice as efficient as the average model sold eight years ago. Depending on your cooling needs, it may pay to invest more in one of the new, high-efficiency units.

But How Much Does It Really Cost?

While simple payback time is enough information for most customers, auditors and retrofitters must understand a wide variety of economic tools for evaluating conservation investments.

Vent Dampers

Properly installed vent dampers can cut fuel bills between 2% and 14 % by sealing off the flue and reducing off-cycle losses from a heating system.

Auditor Roundup

The first installment of this interview with auditors from Florida, Iowa, and California highlights the different strategies used to reduce energy use while staying comfortable in the home.

RCS, Tax Credits and Weatherization

David Moulton, Counsel to the House Subcommittee on Energy Conservation and Power, talks about the mood of Congress and the future of some of the most important federally-funded energy conservation programs.

Volume 2, No. 4: July/August 1985

Stalking the Wild De-superheater

This exotic piece of plumbing eats the waste heat from air conditioners and excretes it into the hot water tank.

Those New Japanese Air-Conditioners

Having popularized the "Walk-Man", the Japanese are ready to

introduce the "Cool-Man" to America.

The Switchplate Gasket Controversy

Test results show that foam gaskets installed behind electrical outlets are not the energy-saving panacea their manufacturers claim.

Polyurethane Foam Sealants: Avoiding the Draft

Polyurethane foam sealants are an effective way to seal up air leaks that are too big for caulk and too small for insulation.

Beyond Simple Payback Time

Sometimes describing cost effectiveness in terms of simple payback time is not appropriate.

A Portable Kilowatt-Hour Meter

The Energy Teller is a lightweight, inexpensive tool for monitoring the electricity consumption of household appliances.

Auditor Roundup II

The final installment of this interview with auditors from Florida, Iowa, and California covers the ways in which auditors discuss investments, conduct audits, and enjoy their work.

Volume 2, No. 5: September/October 1985

Retrofit Wall Insulation: Is There Really Quality in That Corner?

The performance and durability of certain types of wall insulation depend on proper installation, according to some recent on-site measurements.

Saving Money in Public Housing

A San Francisco study showed that a large retrofit program designed to shave energy bills and public housing projects reduced energy use by an average of 12.7% per unit.

Yet Another Way to Cook a Potato

For small meals, microwave ovens are the coolest, cleanest, fastest, most efficient way to cook. But microwaves cook differently than conventional ovens, so direct comparisons can be misleading.

The Reality of Super-Retrofitting: The Hood River Project

Two administrators of the Hood River Conservation Project in Oregon discuss some of the lessons that have been learned after a year of retrofitting an entire community.

Freon-Free Cooling

Evaporative coolers can provide adequate cooling in hot, dry climates and cost about a quarter as much to run as comparatively sized refrigerated air conditioners.

Masonry Backing Rod

Originally developed for use as an expansion joint between concrete slabs, backing rod is proving its worth as an alternative to caulk and foam sealants.

Volume 2: No. 6: November/December 1985

Austin's Conservation Power Plant

By combining an extensive audit program with strict quality control of conservation work on new and existing homes, the City of Austin, Texas is saving the equivalent of one power plant.

Sealing Double-Hung Windows

The double-hung window is an obvious source of air leakage. It appears that the savings from many window-sealing measures have been overstated.

Trimming Conservation in the Green Mountain State

In a complex reorganization of Vermont's home conservation program, the audit process has been trimmed down and is being performed by the utilities.

Japanese Refrigerators Coming to the U.S.A.?

The compact, energy-efficient Japanese refrigerators, soon to be exported to the United States, are packed with features and colors not found on American refrigerators.

Retrofitter Interview-Part I

An interview with retrofitters in New Jersey, Wisconsin, and California, about a variety of conservation measures and practices.

Volume 3, No. 1: January/February 1986

INFRARED SCANNING

Introduction

A primer for infrared scanning.

Practical Techniques for Residential Thermography

How a New Jersey contracting company added infrared scans to its existing insulation business.

Using Infrared for Quality Control of Retrofits

A non-profit Rhode Island firm does infrared inspections of every home insulation job that it arranges.

Retrofitter Interview-Part II

Retrofitters from New Jersey, Wisconsin, and California exchange horror stories and discuss where they get their information.

Endless Hot Water?

Demand water heaters are common in Europe and Japan. Now Americans are considering them as they search for additional ways to cut their fuel bills.

The Hot Water Saver

The Hot Water Saver is a cleverly designed system to reduce heat losses in water pipes.

Volume 3, No. 2: March/April 1986

Blower Doors: Infiltration is Where the Action Is

Blower doors help the retrofitter locate and quantify infiltration leakage. (First of a three part series.)

Window Insulation Put to the Test

The R-value of several window insulation products are lower than what the manufacturers claim.

Some Like it Hot

Here are some tips for auditors and retrofitters on how to keep warm in the winter while still conserving energy.

Warm Rooms

One cost-effective way to reduce a home's energy bill is to create a comfort zone or warm room. Several agencies are using the warm room concept to help save energy in low-income households.

Pool Bills Take a Dive

Excessive amounts of energy are usually consumed in circulating and filtering swimming pool water. A Florida study shows how, with a little clever thought, pool owners can reduce their electricity bills.

Volume 3, No. 3: May/June 1986

A Healthy Outlook for the Blower Door Industry

As prices are being slashed, more blower doors are being sold than ever before.

Efficient Appliances for the Home

An interview with Howard Geller, nationally recognized expert on energy efficiency.

Heat Pumps: Plug 'em in, but don't forget 'em

A heat pump needs constant attention to keep operating at its rated efficiency.

Foiling Heat Flows

Radiant barriers clearly reduce cooling loads, but they should

be treated as a supplement to mass insulation, not as a replacement for it.

Volume 3, No. 4: July/August 1986

Training Opportunities: Staying Out of the Rut

Two articles describe some of the training opportunities for energy conservation practitioners—the auditors and contractors who are recommending conservation measures for homes.

Stockton Training Center

Pacific Gas & Electric's training center, established in 1978, has trained a small army of auditors.

The Cal Poly House Doctor Lab

Not every university is an ivory tower. Cal Poly's "House Doctor Lab" is providing architects with the tools needed to design energy-efficient buildings.

Infiltration: Just ACH50 Divided By 20?

Translating blower door measurements into an average infiltration rate has bedeviled the retrofitter and researcher alike.

Radon Report: More Art Than Science

The interplay between radon levels, house construction, and air infiltration is turning out to be more complex than first thought.

Volume 3, No. 5: September/October 1986

Blower Doors: Variation in Leakage Measurements

Blower-door derived estimates of leakage area can vary greatly under different wind and temperature conditions.

Using the Blower Door: Part I

Interviews with blower door contractors from New Jersey, California, and Washington about the art of using the blower door.

Radiator Reflectors Shine

A clever way to maximize the heat produced by a radiator is to insert a reflective sheet on the wall behind it.

Potential for Conservation in Multi-Family Housing

Annual energy use in multi-family households averages about $900 per unit. The potential for energy conservation in these dwellings remains largely untapped.

Volume 3, No. 6: November/December 1986

Santa Monica's Energy Fitness Program

The Santa Monica Energy Fitness Program represents an alternative to the federally mandated Residential Conservation Service (RCS) audit.

Mobile Homes: The Underrated Retrofit

A typical mobile home can be twice as expensive to heat and cool as a site-built home of equivalent floor area.

Solar Sagas: Turn of the Century Water Heating

In the early 1900s nearly every house in some southern communities had solar water heaters. The technology improved rapidly but soon lost out to cheaper natural gas and electricity.

Is Smart Always Wise?

Energy control systems have a variety of energy-saving applications in the home, but the system must be tailored to the budget and needs of the occupants.

Using the Blower Door: Part II

Interviews with blower door contractors about blower door accuracy and the marketing of an air leakage service.

Volume 4, No. 1: January/February 1987

The AIMS Monitor: Measuring Infiltration, Not Tightness

This new monitor makes it easy to measure the effective infiltration rate in houses over extended periods of time, but it is a poor diagnostic tool.

Haverstick Homes: A Roaring Retrofit

Replacing two large, oil-fired boilers with 32 gas-fired, pulse-combustion boilers reduced heating fuel consumption by 50%.

Degradation of Water Heater Performance

Researchers found that water heater efficiency did not degrade significantly under accelerated testing conditions; but who would have expected 70 pounds of deposits in a water heater?

Residential Water Heating: Low-Tech and High-Tech Alternatives

Ontario Hydro, the largest Canadian utility, has extensively tested technologies for reducing water heating energy use.

RECOs: When State and Local Governments Mandate Energy Conservation

Residential energy conservation ordinances (RECOs) are a novel and effective way to increase the energy efficiency of the existing housing stock.

Volume 4, No. 2: March/April 1987

Making Furnace Retrofit Programs More Efficient: 14,000 Homes Later

Emphasis on low-cost, high-savings retrofits and retrofitter training has resulted in an 11% average reduction in heating costs and less than a two-year payback for thousands of Colorado furnaces.

Fluorescents at Home: A Cheap, Well-Lighted Place

The new compact fluorescent lights are four times as efficient as incandescents and come close to matching incandescent light quality, but they are still an oddity in most homes.

The Art and Science of Balancing Single-Pipe Steam Systems

Uneven heating is the major cause of energy waste and discomfort in multi-family buildings. The Minneapolis Energy Office has begun a pilot program to balance heat distribution in single-pipe steam heating systems.

Anticipators: Completing the Feedback Loop

Most auditors and retrofitters are unaware of—or ignore—the existence of the anticipator within the thermostat. Yet its proper adjustment can improve thermal comfort and energy efficiency.

Volume 4, No. 3: May/June 1987

Como Se Dice "Retrofitter"?

Spanish is the second most common language in the U.S., and the number of Spanish speakers is growing. Utilities are responding to this trend with a range of programs and publications—en Espanol.

Low Energy or Low Quality?

House doctors should approach new "energy-efficient" houses without assuming that they are better insulated than typically built houses.

Bags, Bugs, and Rulers: Preventing Insulation Fraud

Counting empty insulation bags may let homeowners know that the proper amount of insulation was installed.

Shelf Life: An Inquiry Into What—and Who—Can Be Found in Your Refrigerator

The refrigerator is not merely a useful device but also confers an identity upon its user. People frequently "patrol," "forage," or "graze" there, not looking for particular items but rather "taking stock."

Duty Cyclers for Furnaces and Air Conditioners: Energy Savers or Energy Wasters?

Several studies have examined the effects of residential duty cyclers on furnaces, air conditioners, and heat pumps.

Heat Recovery Ventilators

Several years of installer and homeowner experience with heat recovery ventilation systems in Hood River, Oregon have given rise to some hard questions.

Volume 4, No. 4: July/August 1987

Strategic Planting

Properly located trees and shrubs can reduce cooling costs by 20% to 40%. Even limited landscaping can save 5% to 10% and increase comfort.

Time-of-Use Rates

Electric utilities are beginning to charge more for daytime electricity use. Here are some strategies for deciding whether it is worthwhile for a customer to switch to a time-of-use rate.

Air-Conditioner Cycling Programs

Utilities will be paying hundreds of thousands of consumers this summer for the right to switch off their air conditioners for brief periods during the hottest part of the day.

The "Soft" Side of Energy Auditing

The auditor is the linchpin of utility conservation efforts. Two articles in this issue suggest that more emphasis should be placed on the link between auditor and retrofitter.

The Soft Audit: a Human Approach to Energy Conservation

A Maine utility has had considerable success with a "soft" audit that emphasizes psychological considerations.

What Makes an Effective Auditor?

Utilities need to spend as much time hiring and training auditors as they currently spend understanding energy-efficient technologies.

Volume 4, No. 5: September/October 1987

Interview: Grappling With Radon

A leading researcher describes efforts to understand radon and to develop effective techniques for keeping it out of the house.

The Radon Raiders: Turning Perils into Profit

Companies that test for and reduce radon levels in residences are forming one of the fastest growing industries in the U.S.

The Disappointing Field Performance of the Heat Extractor

Recent field tests of a secondary condensing heat exchanger, which can be installed on existing gas or oil furnaces, showed annual average fuel savings of less than 10%.

A Pilot Light in the Air Conditioner?

Turning off the air conditioner or heat pump during the off season can save the homeowner a few dollars per month.

Blower Doors: a Subsidized Success

Sales of blower doors to weatherization agencies are skyrocketing, while sales to private contractors are falling off sharply.

Weatherization in Transition in Northwest Arkansas

The story of the slow-but-steady learning route taken by one Arkansas weatherization agency.

Volume 4, No. 6: November/December 1987

Hood River: The Results Are In

The Hood River Conservation Project will serve as a showcase for conservation resources. Its successes and its failures can be applied to future residential energy conservation efforts across the country.

Saving the "Other" Energy in Homes

Some of "miscellaneous" uses of energy—such as waterbeds, pumps, spas, and even aquariums—use a surprisingly large amount of electricity.

PRISM: a Tool for Tracking Retrofit Savings

Careful examination of utility bills before and after a conservation retrofit is becoming a preferred technique for verifying predicted energy savings. One method, called PRISM, has been widely used and tested by energy conservation professionals.

Taking on Sludge

Two California house doctors have developed a device, called the Muc-Vac, that literally sucks sludge out of water heaters.

Volume 5, No. 1: January/February 1988

Three Bottom Lines: How Much Did that Retrofit Save?

After insulating his walls and installing a new, high-efficiency furnace, a Canadian homeowner wanted to know how much he really saved.

Billing Tenants for Heat: Paying for What You Use

Systems that allocate heating costs in centrally heated buildings are common in Europe and will become more widespread in the U.S. as owners seek ways to separate energy costs from the rent.

Getting More Out of Your Shower: the Shower-Bath Economizer

A new device recaptures some of the heat that normally goes down the drain, potentially cutting gas water heating costs by up to 11%, and electric water heating costs by up to 25%. But there are some problems to work out.

Waterbeds: the Silent Guzzlers

A conventional waterbed uses about 25 kWh per month, about the same as a large refrigerator. Newer soft-sided waterbeds use about half as much.

Appliance Rebates: More than a Free Ride

Appliance rebates, which refund money to the consumer for purchasing energy-efficient models, are becoming a popular way for small and large utilities to reduce their electric demand.

Volume 5, No. 2: March/April 1988

Is Fiberglass Insulation Safe?

The question of whether mineral fiber insulations cause lung cancer has yet to be conclusively answered. In the meantime, workers installing fiberglass and mineral wool insulations should take precautions to minimize their exposure.

How Reliable are Energy Audits?—Setting a Benchmark

It is common practice to obtain a second medical opinion before electing for major surgery. Should one obtain a second opinion before operating on a poorly weatherized house?

Thermostats: Small But Critical

All thermostats are not created equal. At last, here are some data comparing the side-by-side performance of line voltage thermostats for electric zone heating.

Bills of Many Lands

The next time you read your utility bill, consider what it implies about the culture you live in. Which countries have the most complicated, and the simplest, utility bills?

Building Managers: the Actors Behind the Scene

The day-to-day decisions made by building managers greatly influence energy use in multi-family buildings. Their role to date has been underemphasized in energy conservation efforts.

Volume 5, No. 3: May/June 1988

Is There Life after Weatherization?

In response to the uncertainty of federal funding, many low-income weatherization agencies are exploring innovative ways to provide energy services and generate income.

Citizens Conservation Corporation: a Profile

A Boston-based energy services company is mastering the art of financing and retrofitting multifamily buildings.

Converting Steam-Heated Apartment Buildings

Steam-heated buildings use more energy than buildings heated with hot water. Converting an old steam system to a hydronic system can save money and reduce problems with maintenance and uneven heating of apartments.

Weatherizing Double-Hung Windows

Replacing a window is an expensive proposition. In many cases, weatherstripping and repairing the existing double-hung makes economic and aesthetic sense.

Volume 5, No. 4: July/August 1988

Cool Storage Thaws the Home Market

Cool storage systems make ice or cold water at night and deliver cold air to the house during the day. These systems, which reduce peak electricity use, may soon be widely available for residences.

Special Section on Water Conservation

Stretching the Drops: Making a Little Water Go a Long Way

Water-efficient appliances provide the same service as their conventional counterparts but use up to 95% less water. Retrofits should focus on reducing the amount of water flushed down the toilet and sprayed in the yard.

Water Retrofit Programs: Beyond Rationing

Retrofitting is the long-term solution to water shortages that provides the most amenity with the least water. Here's how some water retrofitting programs got the word out and the devices in.

In Search of the Perfect Flush

In less than seven years, the plumbing industry has reduced the amount of water required to flush a toilet from five gallons to less than a half gallon in the most efficient models.

Water-Saving Toilets

How well do low-flush toilets work? The Practical Homeowner Institute tested nine available models for flush volume and performance.

Volume 5, No. 5: November/December 1988

Your Mileage May Vary

Energy Guide labels for refrigerators effectively predict annual energy consumption, but auditors should beware of seasonal fluctuations and the guide's tendency to overestimate the energy use of newer refrigerators.

Outdoor Resets and Cutouts: Quick Fixes for Hot-Water Heating

Outdoor resets provide control of boiler temperatures responsive to outdoor temperatures and can eliminate the waste of heat through overheated hallways and apartments.

SPECIAL SECTION ON RATING SYSTEMS

Home Energy Rating Systems: Information to Increase Energy Efficiency

Home energy rating systems provide information to homebuyers or renters to help them make intelligent decisions about how much energy features—or the lack thereof—should cost.

Testing the Energy Efficient Mortgage Program in Connecticut

Lessons emerge from the experience of ConnSave's attempt to implement a home energy rating system: keep an eye on the real estate market and consumer marketing.

Case Study in Success: Vermont's Energy Rated Homes

The experiment that failed in Connecticut was a glowing success in Vermont. The state certifies homes under the Energy Rated Homes rating system, allowing residents to take advantage of the Fannie Mae/Freddie Mac Energy-Efficient Mortgage Program.

Volume 6, No. 1: January/February 1989

What Motivates Multi-Family Property Owners?

Portland Energy Office's apartment weatherization program has enjoyed remarkable market penetration—22% of the multifamily stock. Program organizers tell how they motivated apartment owners.

Consumer Guide: Lighting The Way Towards More Efficient Lighting

Auditors and others recommending lighting retrofits may use this guide to help consumers find their way through the blinding array of energy-efficient lighting choices available today.

How Effective are Blower Doors?

A field study compared two weatherization techniques—one using blower doors to locate leaks and one based on homeowners' requests for particular retrofit measures. The high-tech method saved much more energy.

Maxtemp: An Expensive Way to Heat a Pool

Florida Solar Energy Center tested a pool heater's efficiency and found it to be a big energy saver. However, the study appears to be very misleading.

Volume 6, No. 2: March/April 1989

A New Generation of Heat Pumps

Japanese manufacturers have been selling variable-speed heat pumps in their country since 1981. Now two American manufacturers plan to enlighten the American public as well. A detailed look at the state of the art reveals how the technology improves efficiency.

Retrofit Experience in U.S. Multi-Family Buildings

Agencies have retrofitted and measured savings in enough multi-family buildings to provide a solid knowledge base for future retrofits. The data points to where certain measures are most appropriate and cost-effective.

What Makes Rating Systems Tick

Home energy rating systems help inform home buyers and renters, potentially increasing the market for efficient homes. This comparison of seven HERS should help those designing or choosing systems for their communities.

Clearing the Air on Air Cleaners

Energy conservationists increasingly hear concerns about indoor air quality. How should we respond when people hope to solve the problem with portable air conditioners?

Volume 6, No. 3: May/June 1989

To Insulate a Basement

The first measured savings from foundation insulation are in. Even in well-insulated homes, foundation insulation cut space-heating use by 19%. As a bonus, homeowners got more livable basements out of the deal.

Straight Talk about Radiant Barriers

Radiant barriers do save energy, but many advocates worry that the overstated claims of some manufacturers will spoil the market before it gets established. This first article of a two-part series discusses the research done to date—and its limitations.

A High-Tech Tool Meets Low-Income Weatherization

Infrared cameras—once only seen in expensive R&D studies—

are finding their way into weatherization programs. Several agencies time-share the equipment, using it to train crews and inspect work.

Volume 6, No. 4: July/August 1989

Barriers to Water-Efficiency Programs

Water efficiency experts are ready and able with cost-effective solutions to water supply, pre-treatment, heating cost, and wastewater treatment problems. But the institutional challenges they face rival those faced by early proponents of energy efficiency.

Yes, You Can Please 'Em All

Low-income weatherization government funds often end up as savings in the pockets of only the landlords. A pilot program in Chicago showed that tenants and landlords can share the financial benefits of weatherization.

Using Water to Save Energy

The landscape around a house can greatly affect cooling energy needs and occupants' comfort. But in the arid Southwest, the cost of watering the garden is a major consideration.

Efficiency versus Comfort with the New Air Conditioners

The standard measurement for air conditioner efficiency, the Seasonal Energy Efficiency Ratio, tells how efficient the cooler is at reducing temperature, not humidity. The latest "high-efficiency" models may not provide the desired comfort in humid climates.

Volume 6, No. 5: September/October 1989

Comparing Building Energy Analysis Software

The U.S. Department of Energy has developed several software packages for energy analysis which can calculate the energy effects of different design and retrofit options.

Boiler Tune-up: Improving the "MPG" of Multifamily Buildings

For multifamily buildings, an efficiency improvement of even a few percent can translate into large savings and pay for itself in two years or less.

Notes from the Land of Frosted Glass

The Japanese economy squeezes twice the GNP out of a megajoule of energy as the United States' does. This energy efficiency appears in the home as well as in the factory.

Going Tankless

Tankless water heaters can offer big savings to small households, but consumers need to understand that the savings come with some inconveniences.

Volume 6, No. 6: November/December 1989

Air Handler Fan: A Driving Force for Air Infiltration

A home's central air system's air handler may move as much as 2000 cubic feet of air per minute, driving air through any leaks in the ducts. It can also cause inefficient and possibly dangerous pressure differences from room to room.

Retrofitting Single-Pipe Steam Heating Systems

There are alternatives to replacing those old single-pipe steam systems in multifamily buildings with high-efficiency, forced-air systems.

Barriers to Radiant Barriers

As a follow-up to the article on radiant barrier research in the May/June 1989 issue, here is our look at the issues of sales, pricing, and cost-effectiveness.

Airtightness the Simple (CS) Way: Cost-Effective Techniques for New Construction

Common air barrier methods may be overly complex and excessive for the needs of the real world. A modified ADA method has proven cost-effective—and perhaps more importantly—attractive to builders.

Volume 7, No. 1: January/February 1990

Sidewall Insulation and Air Leakage Control

What makes a quality blown insulation job? Careful attention to densely packing the insulation and sealing bypasses, say the authors. And they have the diagnostic equipment, experience, and science to prove it.

CMFERT: Training and Testing of Mobile Home Retrofits

Drag a mobile home into a warehouse and what do you get? An ideal setup for training and testing weatherization techniques. A Colorado project did just that and proved that some innovative retrofits are better than current practice.

Smart Homes: Just Around the Corner?

Recent developments may bring us one step closer to automated homes and residential energy management systems.

Low-flow Showerheads, Family Strife, and Cold Feet

This reprint of an old favorite reminds us that people use showers, not buckets and stopwatches.

Volume 7, No. 2: March/April 1990

Appliance Efficiency Programs: Beyond Rebates

Even when programs aren't designed for immediate, measurable energy savings, evaluation can help assess their success, and help others avoid reinventing the wheel. The Blue Clue appliance efficiency program is a good example.

Diagnostic Inspection Tools

Four of the hand-held tools auditors have found useful are described here: sonic leak detectors, combustible gas detectors, infrared thermometers, and density-sensitive stud finders.

Do Vent Dampers Work in Multifamily Buildings?

While the data are not conclusive, this substantial study evaluates the effectiveness of vent dampers for saving energy in multifamily buildings.

Blower Door Guidelines for Cost-Effective Air Sealing

Since evaluations have proven that air sealing is often excessive, a new method has evolved to provide on-site feedback about the safety and cost-effectiveness of each increment of air sealing. It's the latest trend in blower-door use.

Volume 7, No. 3: May/June 1990

Fifty Million Retrofits Later

Energy savings and cost data from single-family retrofit projects throughout the country have been compiled in one database. Shell measures and heating system retrofits can be compared for their relative effectiveness at saving energy.

Furnace Replacement: The High-Efficiency Payoff

Energy conservation programs are taking heating system retrofits more seriously. Illinois's success story proves that high-efficiency furnaces can be a worth-while investment.

Life After RCS

The federal law mandating utilities to provide energy audits expired in June 1989. But state and utility programs may be increasing in variety and sophistication now that they are freer to adapt to local conditions.

From Insulation Contracting to Radon Mitigation

As the definition of "house doctor" has evolved over the past ten years, many contractors have expanded their services. Here's the story of one insulation contractor who has found a niche in radon testing and mitigation.

Volume 7, No. 4: July/August 1990

Setting Priorities for Weatherization: Beyond Simple Payback

With oil overcharge monies being mopped up and federal dol-

lars almost pumped dry, weatherization programs have to look at the efficiency of their own operations to get the most out of their limited resources.

Consumer Guide to Energy-Saving Windows

Are all those home heating and cooling energy and dollars going out the window? This handy buyer's guide gives a comprehensive overview of window energy use.

Door-to-Door Water Conservation Retrofits: The San Jose Story

Eliciting residents to install their own water-saving devices allowed San Jose, CA to retrofit 90% of targeted households.

A World's Fair of Appliances

Our ace reporter returns from a West German appliance exposition with armfuls of brochures. He reports on Europe's latest innovations in saving—and wasting—energy and water.

Volume 7, No. 5: September/October 1990

One Large Builder's Energy Evolution: What Worked, What Didn't

Going against conventional wisdom, a builder in Colorado built—and sold—more than 700 extra-energy-efficient homes. The owners now spend half as much on space heating as their neighbors do.

Taking Back the Take-Back Effect: Low-Income Energy Education

Education can save energy, especially when combined with traditional weatherization. Several program evaluations reveal that education can be as effective—and cheaper—than standard energy conservation measures.

SPECIAL SECTION ON MONITORING AND EVALUATION

Now That I've Run PRISM, What Do I Do With the Results?

Experts answer many questions about how to interpret the output generated by PRISM, the most widely used software package for analyzing utility billing data.

Monitoring Made Easier

Careful planning and good experimental design can simplify monitoring and insure that the evaluator gets the right answers to the right questions. Here are some resources to assist in that process.

Volume 7, No. 6: November/December 1990

Multifamily Lighting: Come On In, the Savings are Fine!

Great potential for electricity savings lurks in the alleys, hallways, stairwells, and even behind the exit signs of multifamily buildings. But to realize that potential is not always as easy as screwing in a lightbulb.

Is That Attic Crawl Necessary?

GRASP's approach to Philadelphia's predominant housing type—the rowhouse—shows how testing and monitoring of retrofit techniques can customize local auditing and weatherization efforts for better savings. And what they've found has relevance elsewhere.

Is it All a Lot of Hot Air?—Mechanical Ventilator Performance

Much of the debate over whether to build homes airtight and then add mechanical ventilation has overlooked two important underlying questions. Do ventilators work? And do people use them?

Ground-Source Heat Pumps: Earth as Heat Source and Heat Sink

With ground-source heat pumps, humans have learned to use the earth for comfort.

Volume 8, No. 1: January/February 1991

Good News on the Setback Front

Energy educators are beginning to understand the complex nature of how people relate to their thermostats, and manufacturers are using that understanding to make setback thermostats easier to use.

Mobile Home Retrofits Revisited: CMFERT Phase II

Testing by the trailer-in-a-warehouse people reveals that many of the best-performing retrofits save a higher percentage of energy under simulated wind conditions than they do in still air. Also, new sidewall insulation techniques showed promising results.

Cellulose Insulation: Not Like Paper and Fire

Only recently did scientists test the longevity and stability of two of the most commonly used fire retardants in cellulose insulation, borax and boric acid. The retardants were found to be stable.

Bidding for Demand-side Management Performance Contracts

More and more utilities are looking to contract-out energy conservation services rather than build new power plants. Bidding for these demand-side management programs poses great opportunities to weatherization agencies and energy services companies.

Volume 8, No. 2: March/April 1991

Smoke and Mirrors: The Essentials of an Auditor's Toolbox

Home Energy spoke with some prominent residential energy auditors and trainers to find out what tools they find indispensable. Here is the consensus.

Front-End Modular Boilers: Lessons from the Real World

Recent field experience and monitoring indicates that front-end modular boilers are more complicated to install than expected, and save less energy than predicted, but they may be worth considering for some applications.

Heat Pumps: Tricks of the Trade That Can Pump Up Efficiency

Heat pumps can be highly efficient devices for heating or cooling indoor air if properly serviced. A study in California shows the value of the right installation, maintenance, and troubleshooting techniques for the whole system.

Getting a Bead on Caulks: How to Choose the Right Kind

Caulks have a tremendous variety of applications and purposes. Finding the best caulk requires defining the job and matching the type of caulk to the task at hand.

Volume 8, No. 3: May/June 1991

Passive Solar Design: Housewarming With Many Efficient Returns

New design strategies that rely on the sun can reward the architect, builder, and occupant with a home that is beautiful, comfortable, and energy-efficient.

An Ounce of Prevention: Residential Cooling Repairs

A Pacific Gas and Electric study of high cooling bill complaints in Fresno, CA revealed that low air conditioner efficiency could be remedied by informed diagnostic and repair techniques.

Backdrafting Causes and Cures

Steps can be taken to prevent hazardous furnace gases from reentering tightly built or weatherized homes.

Do Reusable Diapers Use More Energy?

Disposable plastic and paper, or reusable cloth? Home Energy puts the cloth-versus-disposable diaper debate into an energy-efficiency context.

Volume 8, No. 4: July/August 1991

Stop Energy Loss and Moisture Build-Up—Cold!

In the Northern States and Canada, special insulating and moisture problems confront builders. Both air barriers and vapor retarders are a must in today's homes, but not just any old way of using them will do.

Does 'Low-Flow' Still Mean Low Satisfaction?

One Pacific Northwest study found encouraging results in gauging consumer likes and dislikes about low-flow showerheads by focussing on attitudes, and making sure people are actually using them.

Low-Flow Showers Save Water—Who Cares?

With a jury-rigged flow-rate measuring bucket in hand, researchers in Yakima, WA wanted to see if water savings and a satisfying shower with a low-flow showerhead go together.

Between Two Decades: Weatherization Report Card

Authors of this Home Energy report card find that where program managers have evaluated their progress, and where lessons have been incorporated into innovations, energy savings have increased measurably.

Volume 8, No. 5: September/October 1991

Computing Energy Savings: A Software Overview

Today, the energy conservation professional has a vast array of computer-driven analytical tools to choose from. Before diving in blindly, consider which software is the right tool for the job.

Mousing Through the Basement

Trainees in Minnesota are learning how to get around the basement and learning audit protocols from an interactive—and fun—computer training program.

Domotechnica 1991: Steady Progress, No Revolutions

Once again, Home Energy's roving reporters bring home the goods for energy efficiency, this time news of zero-CFC refrigerators and the fastest spin washer in the world.

How to Avoid Window Condensation

Selecting better insulating windows and eliminating excess moisture in a home are cures for condensation problems.

Making 'Hers' a Household Word

Even the best home energy rating system won't conserve a single kilowatt-hour unless someone uses it. Here are some tried and true marketing strategies to make programs fly.

Volume 8, No. 6: November/December 1991

Moving Weatherization Agencies into the Utility Age

Weatherization agencies considering contracting with utilities should know how to avoid pitfalls and establish a rewarding (and profitable) relationship.

Contracting with WAP Agencies: the Utility Perspective

Mass-Save has thought out the issues to address before signing contracts with weatherization agencies.

Of Sockets, Housecalls, and Hardware

To assess the potential for conversions to compact fluorescents, researchers for Pacific Power visited 53 homes to count light sockets, tally hours of "on" time, and weigh occupant attitudes—raising as many questions as they answered.

Europe's 'Bright Light' Conference

The first ever European Lighting Conference presented lessons from utility lighting programs on the continent: give compact fluorescents away or keep them within household budgets, and people will welcome them.

Florida Cooling, the Natural Way

During a hot and sticky Florida summer, a whole-house fan can augment nature's own cooling effects and bring down air conditioning loads.

Volume 9, No. 1: January/February 1992

A Warm Wind Blows South: Virginia's Weatherization Evaluation

Low-income homes in the Southeast have just as great a potential for saving energy as many homes in colder climates, according to an evaluation of Virginia's weatherization programs.

Teach Your Oiled Furnace New Tricks

Researchers in Canada have lab- and field-tested modern retrofits that boost their efficiency and reduce emissions in oil-fired heating systems.

A Cozier and Cheaper Home: Home Energy's Guide to Insulation

Once you've decided to insulate, it's time to consider where, how much, and what type of insulation to install.

Milking Controls for All They're Worth

Commonly used by utilities to shave peak load demand, water heater load controls may turn out to be energy conservation devices as well.

Volume 9, No. 2: March/April 1992

A Million Miles of Ducts: Duct Sealing Update

The verdict is in: forced-air systems promote air infiltration, and air sealing efforts should focus on ducts first. But the science of duct sealing is still evolving.

Light Loggers—Who Needs 'Em?

Lighting retrofits have suffered from a lack of measured data. Enter the light logger and other better known tools with new applications for predicting energy savings.

Energy Fitness: Canvassing Urban Neighborhoods

How can utilities serve the poor, non-English speaking, and elderly people DSM programs find so hard to reach? Here's how one contractor does it.

Showerhead Codes—With Teeth

Oregon's current flow rate standard for showerheads has been routinely violated. Only increased compliance with a more stringent new law can ensure energy savings.

Volume 9, No. 3: May/June 1992

How Well Do Radon Mitigation Strategies Work?
Naturally occurring radon in homes can't be completely avoided, but it can be minimized. Indoor air quality researchers compared results of six popular ways to mitigate radon in houses in the Spokane River Valley and New Jersey.

Convective Loss in Loose-Fill Attic Insulation

Researchers at Oak Ridge National Laboratory have quantified convective loss through loose-fill fiber-glass attic insulation. They have also tested remedial measures—additional layering or "covers"—that reduce the losses.

Air Conditioner Efficiency in the Real World

Tighten up the ducts and what do you find? Central air conditioning systems operating at much lower than rated efficiencies. Field research shows that the price of neglected air conditioner maintenance can be high bills and less comfort.

Home Energy Use in Moscow

A *Home Energy* interview provides some insights on how Muscovites use energy in their changing social and economic climate.Volume 9, No. 4: July/August 1992

Once Heated, Twice Used

A single appliance can efficiently and conveniently supply hot water for both domestic use and space heating in cold climates, so say test results from multi-family units in Minneapolis.

Efficiency and Solar Water Heating: Untapped Potential

Solar water heating is more than just a dream for an environmentally sound future. If combined with increased efficiency of

the entire water heating process, it is practical today.

New Dawn for Solar Regulation

New efforts to measure the efficiency and durability of solar water heaters are improving the solar industry's credibility, lost during its unregulated growth in the '70s and early '80s.

Changing the Way Southern Californians Flush

Ever more costly water resources and strained waste treatment facilities compelled two California water providers to find a new conservation tactic—rebates for water-miserly, ultra-low-flush toilets.

Volume 9, No. 5: September/October 1992

Auditing the All-Electric Multifamily Building

A rehabbed, all-electric multifamily building can give an auditor one whale of a headache—or the satisfaction of a job well done, if idiosyncrasies are transformed into insights.

Simulation Software Gets Reality Check

Field checking a simulation program's results against monitored data can show where refinements should be made. California studied the software used to develop the state's codes, with surprising results.

New Construction in New England: The Energy Crafted Home Program

The comprehensive design of the Energy Crafted Home program includes regional utility collaboration, builder involvement, and a multi-media marketing approach.

East Meets West: Gas-Fired Heat Pumps

Natural gas-powered engines that run heat pumps are popular now in Japan and may someday condition the air in many U.S. homes.

Volume 9, No. 6: November/December 1992

Conversions + Conversations = Conservation

The Grays Harbor Public Utility District set out to count sockets and lighting on-time in homes in Aberdeen, WA. They found averages higher than commonly believed—and that the right installation approach can win a high retention rate.

Performance Contracting: Advice To Utilities

A demand-side management program can unravel when expectations of utility and contractor don't mesh. A well-worded performance contract can keep all parties happy.

Performance Contracting: An ESCo Perspective

An energy services company describes how it provides conservation measures for Niagara Mohawk Power's demand-side management program.

In Search of the Missing Leak

Two weatherization mavericks took an idea and the versatile blower door into the field and returned with three new methods to find and measure house envelope air leakage across building boundaries.

Volume 10, No. 1: January/February 1993

Controlling Recirculation Loop Heat Losses

Stop going around in circles about what to recommend for multifamily buildings with attached recirculation loops. Here are two options that offer proven energy savings and a two-year payback!

SPECIAL REFRIGERATION SECTION

Is That Old Refrigerator Worth Saving?

We explore this question through case studies of refrigerator replacements.

Refrigerator Bounty Programs

Utilities have found that it is beneficial to collect and dispose of operating second refrigerators. Along with energy savings have come waste management challenges.

Performance Versus Projections: Does Your Refrigerator Measure Up?

As refrigerators become more efficient. consumers and demand-side managers face a number of questions. Bright yellow "Energy Guide" labels list refrigerator energy consumption, but how accurate are they?

The Race to Make the Fridge of the Future

Refrigerator makers are participating in new projects that will bring energy consumption far below the latest government standards and find alternatives to ozone-depleting chlorofluorocarbon gases, or CFCs.

Volume 10, No. 2: March/April 1993

Making Low Income Housing Affordable: The Northgate Retrofits

The first non-profit buyout and rehabilitation of a HUD housing complex demonstrates that energy efficiency can keep housing costs affordable, and that fuel switching can be an effective demand-side management strategy.

Building Tightness Guidelines: When Is a House Too Tight?

When it comes to weatherization, what's good in Arkansas may be bad in Maine. New guidelines will help blower door users tailor air tightness levels, preserving air quality and energy savings.

Keeping a Running Score on Weatherization

An evaluation built around simple run-time metering of furnaces can tell a program manager if weatherization work is headed in the right direction.

'Read Me Your Thermostat': Short-Term Evaluation Tools

Installing and using run-time meters the right way, in concert with well-planned weekly calls to meter reading clients, can provide effective evaluation of weatherization work.

Volume 10, No. 3: May/June 1993

Home Alone—Living Off the Grid

What does a low-consumption house look like? Can comfort and conservation co-exist? The design and metering of a sun-powered house in Arizona suggest answers to these questions, and more.

The Reach of Low-Income Weatherization Assistance

The most comprehensive review to date of the sources and uses of funding for low-income energy conservation shows we've come a long way, but the job is far from over.

Integrated Heating and Ventilation: Double Duty for Ducts

Northwest building codes require mechanical ventilation in new homes. Combining heating and ventilation can fit the bill if the builder considers the whole system carefully.

Building an Energy-Efficient Home Office

How does one person manage to make clients feel right at home? Her prescription for a home office makeover begins with energy-efficient lighting.

Telecommuting: An Alternative Route to Work

Thanks to a revolution in office technology, experts predict that by 1995, some 11 million people—9% of the adult work force—will telecommute. What kind of energy tradeoff can we expect as more Americans work at home?

Volume 10, No. 4: July/August 1993

Pulling Utilities Together: Water-Energy Partnerships

Water and energy utilities are beginning to cooperate in innovative efficiency projects, extending the reach of their programs and effectiveness of their organizations.

Affordable Cooling with Window Air Conditioners

New research shows that replacing low-efficiency window air conditioners with high-efficiency units can produce measurable savings and can be cost-effective in homes with high air conditioning electricity consumption.

What Stays On When You Go Out

For reasons which often remain mysterious, utility bills scarcely change even when the house is empty for most of the billing period. Home Energy offers some explanations.

Selecting an Infrared Imaging System

Over 150 infrared imaging systems are now used in U.S. weatherization programs and their numbers are growing. What do you need to know before making a purchase?

Volume 10, No. 5: September/October 1993

Weatherization Assistance: The Single-Family Study

Single-family retrofits by the Weatherization Assistance Program are more cost-effective in cold and moderate regions than in hot climates, but program improvements can belance the map.

Trade Allies: Long Haul Partners

"Trade allies" can include anyone involved in residential energy efficiency. They can make or break a demand-side management program.

SPECIAL DUCT SECTION

Diagnosing Ducts: Finding the Energy Culprits

Experts explain and compare the latest techniques for finding and fixing leaky ducts.

Basements: A World Unto Themselves

Homes with basements require special attention when testing for duct leakage, as demostrated by studies involving hundreds of homes.

Utility Programs: Who's Repairing What?

An overview of utility duct programs across the nation, with lessons from North Carolina, California, and Florida.

New Construction: Doing it Right the First Time

Guidelines for designing and installing tight duct systems in new homes.

Looking Ahead: Raising Standards and Savings

A preview of what's to come, and just how much sealed and insulated ducts can save.

Volume 10, No. 6: November/December 1993

Sizing Up Skylights

When selecting a skylight, knowing its energy aspects can ensure thermal comfort as well as a favorable appearance.

Checking Out HUD's Proposed Mobile Home Performance Standards

Researchers measured the thermal performance of two mobile homes built to meet proposed new energy standards. How did the homes—and the standards measure up?

Downsizing Steam Systems

If downsizing a steam heat system can't be avoided, certain tricks of the trade can ensure that reduced capacity translates to comfort and savings.

Leaking Electricity

In many electrical devices the "off" switch is a lie. Sometimes appliances "leak" electricity.

Understanding Power Quality

The home electronics revolution and the growing number of utility programs promoting compact fluorescent lamps are ushering in power quality as a residential issue.

Don't Force Air, Go with the Flow

Hydronic heating systems can offer a comfortable and energy-efficient alternative to forced air distribution systems.

Volume 11, No. 1: January/February 1994

Can We Transform the Market Without Transforming the Customer?

Whatever the condition of a home, the behavior of the occupants is the most powerful determinant of how much energy is consumed.

Introduction to Blower Doors

Now a widely used diagnostic tool, blower doors have revolutionized the way most professionals approach retrofit work. This introduction explains how blower doors work, what can be gained from their use, and what a typical blower door test involves.

Infiltration: Just ACH50 Divided by 20?

This *Home Energy* classic, originally printed in 1986, explains a surprisingly simple way to take one air infiltration measurement and determine a home's average air infiltration rate.

Everything I Know about Energy-Efficient Showerheads I Learned in the Field

In an end-use metering study conducted by Pacific Northwest Laboratories, low-flow showerheads saved less energy and water than expected. The results underscore the importance of using metered data to design conservation programs, because engineering estimates can vary radically from actual savings.

Volume 11, No. 2: March/April 1994

Perry Bigelow: Energy Efficiency Maestro

If production builders established a premier school for energy efficiency, Chicago-area builder Perry Bigelow would rank high on the list of potential chief instructors. Throw in a mandate for affordability and Bigelow would likely lead the way.

Capturing Conservation through Community Energy Management

A renewed interest in energy conservation has spawned a revival of community-based energy management projects throughout the United States and Canada.

Evaluating Low-Income Water Heater Fuel Switching

A recent study sheds light on the practical potential of electric-to-gas water heater conversions.

Cooling Benefits from Exterior Masonry Wall Insulation

Field research demonstrates electricity savings and demand reductions from insulation retrofits of concrete block houses in hot, dry climates.

Some Like It Hot

This reprint, the second in *Home Energy*'s tenth-anniversary series, offers tips on how to keep warm in the winter while still conserving energy.

Volume 11, No. 3: May/June 1994

Saving Energy with Reflective Roof Coatings

Reflective roof colors can save energy in hot climates and can help utilities in warm climates reduce peak demand. But how cost-effective are they?

Ten Highly Effective Weatherization Programs

There is no one recipe for success when it comes to running a weatherization program, but the more successful agencies share a number of traits.

Computerized Energy Audits

A move toward the use of computerized energy audits is afoot in the U.S. Department of Energy's Weatherization Assistance Program. We examine some of the audits weatherization agencies are now using.

Building Science Education in the Community College

On the premise that architects and builders would design and

construct more efficient housing if made aware of the impact of their decisions, one energy consultant developed and now teaches a community college course to facilitate that awareness.

¿Como Se Dice "Retrofitter"?

This article, the third reprint in our tenth-anniversary series, is excerpted from the May/June '87 issue of *Home Energy*. With the continuing growth of the Spanish-speaking population, it is even more useful today.

Volume 11, No. 4: July/August 1994

Weatherization Assistance: The Fuel Oil Study

The U.S. Department of Energy's Weatherization Assistance Program is very cost-effective in single-family, fuel-oil-heated houses.

A Journey through the Gray Literature

If you're looking for measurements of energy savings from the latest efficiency gadget, chances are that some utility company has them. But can you see the data? Don't count on it.

Evaluating Ventilation in Multifamily Buildings

The technologies used to ventilate multifamily buildings are not all that complex, yet problems with indoor air quality and high energy use are all too common.

WATER WATCH

Xeriscape: Winning the Turf War Over Water

While xeriscape may conjure visions of rocks and cow skulls in some minds, xeriscaping principles can produce beautiful, functional, and resource-conserving landscapes.

Low-Flow Showerheads, Family Strife, and Cold Feet

This article, which initially appeared in 1985, is another installment in *Home Energy*'s Tenth Anniversary series. Its conclusion—that energy savings from showerhead retrofits can sometimes be less than predicted—was just slightly ahead of its time.

Savings and Showers: It's All in the Head

A metering study of showerhead savings from a PG&E rebate program revealed that people spend less time in the shower than they think.

The Big Flush: Saving Water in the Big Apple

New York City is implementing a number of bold water-saving steps, including the largest toilet rebate program in the nation to date.

The Rise of Water Service Companies

Water service companies in California, Arizona, Florida, Colorado, and Virginia are finding it easy to cut water costs by making adjustments in a housing unit.

Volume 11, No. 5: September/October 1994

User-Friendly Pressure Diagnostics

Here is an easy-to-understand explanation of pressure diagnostics. The "user-friendly" approach focuses on measuring pressures rather than just leakage to help you quickly determine which weatherization treatments a home needs. Know what you're measuring before you start work.

Fireplaces: Studies in Contrasts

Energy-efficient, environmentally friendly, and safe alternatives to the outmoded conventional fireplace are here, and they're aesthetically pleasing too.

"Superwindow" Retrofits Show Significant Energy Savings

A pilot project conducted in the Pacific Northwest stimulated demand for high-performance windows, providing cost and energy performance data along the way.

Waterbed Heating: Uncovering Energy Savings in the Bedroom

Waterbeds can easily put refrigerators to shame in a kWh-guzzling contest and nearly one of every six homes has one. Some utilities are now targeting them in their energy conservation programs.

Volume 11, No. 6: November/December 1994

Condensing Furnaces: Lessons from a Utility

If you avoid the common mistakes, condensing furnaces can typically deliver heating savings of 20%-35%, assuming the old furnace was in the 60% AFUE range.

SPOTLIGHT ON LIGHTING

Lighting Makeovers: The Best Is Not Always the Brightest

With a wide range of energy-efficient lighting designs to choose from, quality of light and quality of life go hand in hand with energy savings.

Steps to Successful Lighting Programs

From information programs to financial incentives, collective efforts and "technology-push" programs, there are many ways utilities can encourage consumers to use more efficient residential lighting.

How to Keep 'Em Down Home in the Socket

Simply putting a compact fluorescent lamp into a fixture where an incandescent once was does not make a successful retrofit. High retention rates, crucial to CFL retrofit programs, start with the auditor or installer.

Putting Energy-Efficient Lighting in Its Place

In the past, consumers greeted compact fluorescent lamps with mixed enthusiasm. Will new, improved bulbs and manufacturer attempts at mainstream marketing increase the popularity of the CFL in the home?

Whatever Happened to the E-Lamp?

In an effort to build a better light bulb, three manufacturers are producing or developing electrode-less induction lamps. But, so far, these lamps have not made it into the residential market.

Fixing the Fixtures

Dedicated fixtures designed explicitly for the compact fluorescent lamp offer an effective and permanent solution for energy-efficient residential lighting.

What to Do when the Lights Go Out

The United States and Europe each have their own methods for handling waste disposal problems created by new lighting technologies.

Consumer Guide: Energy-Efficient Lighting for the Home

This guide can help consumers find their way through the wide array of energy-efficient lighting choices available today.

Volume 12, No. 1: January/February 1995

Retrofitting Flooded Homes

For little extra cost, flood victims can often save significant amounts of energy and money in the long run by incorporating efficiency into repairs or replacement of materials and systems.

Reducing the Embodied Energy of Buildings

Sure you know about improving a building's energy efficiency by reducing its operating energy. But what about recognizing or reducing the embodied energy of structures?

Energy-Efficient Remodeling—Grab the Opportunity

The first article in a series on energy-efficient remodeling. The opening article is an introduction to the first and most important lesson on the subject: the best assurance that remodeling will bring energy savings is to take a whole-house approach.

Resource Guide for "Total Comfort" Training

Professional courses on energy-efficient services for the home.

Annals of Energy Auditing: The Case of the Refrigerator with Rounded Corners

A farm, a drug factory, and an energy-efficient household appliance. Most of the events described here are true, but the names have been changed to protect the innocent.

Volume 12, No. 2: March/April 1995

Shade Trees as a Demand-Side Resource

Several utilities have embraced trees as a solar-powered demand-side management resource. What do we know so far about the effects of shade trees on building energy performance?

Combustion Safety Checks: How Not to Kill Your Clients

People who manage or work within programs that provide any significant service inside a building need to be familiar with the basics of combustion and combustion safety.

Beauty and the Beast Upstairs

The same features that are often added to the top story of homes to give them distinctive architectural beauty can also make them rather beastly to heat or retrofit. One-and-a-half story houses, like the Cape Cod-style found in New England, are typical of those that pose tricky insulation and air sealing problems.

Ventilating Attics to Minimize Icings at Eaves

Using outdoor air to ventilate the space below a snow-covered steep roof is an effective way to avoid icicles and ice dams.

Special Resources Section:Home Energy on the Internet

Useful information on energy efficiency and renewable energy is abundant on the Internet—if you know where to look for it.

Volume 12, No. 3: May/June 1995

Wisconsin's "Orphan" Solar Program

One utility found that rehabilitating old solar water heaters amounted to a cost-effective energy conservation program.

Bigger is Not Better—Sizing Air Conditioners Properly

It is generally accepted that "the right way" to specify an air conditioning system is to calculate the loads, select a piece of equipment that will provide comfort to the customer in a wide variety of conditions, and design the duct system accordingly. Unfortunately this is rarely practiced.

Making Energy Mortgages Work

At a time when many energy efficiency projects face an uncertain future, home energy ratings and energy mortgages are receiving more attention than ever. Will enthusiasm in the industry and new programs from conventional lenders and the federal government finally open up the market?

Measuring the Performance of the National Energy Audit

A field test conducted in North Carolina demonstrates the significant performance improvements that the National Energy Audit (NEAT) offers compared with Project Retro-Tech, and shows that state-of-the-art weatherization methods have come a long way.

Annals of Energy Auditing: Suicide in Sendai

In this episode of "Annals," Alan Meier meets Dr. Hiroshi Yoshino of Sendai, Japan.

Volume 12, No. 4: July/August 1995

Selecting Windows for Energy Efficiency

New window technologies have resulted in greater energy benefits and more practical options for homes. This selection guide will help homeowners and designers take advantage of the expanded window market.

Advancing the Art of PRISM Analysis

A new version of the computer program PRISM now makes it easier to transform run-of-the-mill billing data into statistically sound estimates of energy savings.

Urethane Foams and Air Leakage Control

Urethane foams can be a key component in a continuous, high-performing air barrier and have high R-values when used as insulation.

Moisture and Mobile Home Weatherization

Vapor retarders located on the exterior of wall cavities can cause serious moisture problems, including structural deterioration, in mobile homes located in northern heating climates. Weatherization can make the problems worse by increasing indoor humidity levels.

Graywater: An Option for Household Water Reuse

With household wastewater eligible for reuse in the landscape accounting for about half of all indoor water use, graywater systems make sense as a way to maintain landscapes and reduce water bills.

Volume 12, No. 5: September/October 1995

Remodeling Kitchens: A Smorgasbord of Energy Savings

During remodeling, the kitchen offers a greater variety of ways to cut energy costs than anywhere else in the home.

Carbon Monoxide from Ovens: A Serious IAQ Problem

It might not be the turkey that puts you to sleep after dinner.

MULTIFAMILY FOCUS

An overview of the Multifamily Sector

The Best Boiler and Water Heating Retrofits

Air Sealing in Low-Rise Buildings

Bright Prospects for Lighting Retrofits

The Key to Persistence

Energy Education: A Kilowatt is a Terrible Thing to Waste

Using Fuel Bills for a Targeted Investment

PROFILESOFMULTIFAMILY WEATHERIZATION PROJECTS

A Tale of Five Cities

Multifamily Retrofit, Southern Style

Volume 12, No. 6: November/December 1995

Fundamentals of Moisture in Houses

Moisture can be one of the most vexing areas of building science to diagnose. However, a basic understanding of the principles involved can help a novice sleuth develop a strategy of finding and combating moisture problems.

The History of the Blower Door

Perhaps no piece of equipment has changed the way energy professionals look at buildings more than the blower door. Over the past 15 years, entire diagnostic procedures have evolved around this relatively simple device that can make subtle, but measurable, changes in house pressures.

Remodeling Bathrooms: Let the Energy Savings Flow

Bathroom remodeling offers a wide range of opportunities to conserve energy, from installing efficient showerheads and faucet aerators to air sealing and insulating around the bathtub.

Air Sealing in Occupied Homes

Over the last decade, many new techniques have evolved for improving the airtightness of existing homes. With this increased ability has come the responsibility to be comprehensive.

Oh, How I Wish YouCould Have Seem ISH!

A tour of the ISH (International Sanitation and Heating) fair in Frankfurt, Germany, last March reveals an Oz of plumbing and heating.

Volume 13, No. 1: January/February 1996

Outward Bound: Adding Efficient Living Space

By paying attention to the building shell, remodelers can make sure that the energy bills don't grow faster than the house.

Duct Improvement in the Northwest
Part I: New Construction and Retrofit

The Residential Construction Demonstration Program provides pointers on duct sealing methods and program design.

Duct Improvement in the Northwest
Part II: Mobile Homes

Drop lights, mirrors, pressure pans, and a willingness to get dirty are some of the prerequisites for successful duct repair in Northwest mobile homes.

Creating Quality in New Construction: A Practitioner's Perspective

Twenty-five years after the first energy crisis, most newly constructed homes still lack the most basic energy conservation details.

Retrofits We'd Rather Forget

Insulation experts tell all, offering valuable lessons to the rest of us.

Volume 13, No. 2: March/April 1996

Mechanical Ventilation for the Home

A ventilation system gives occupants control over a home's air change rate and thermal comfort. This article discusses the options available today for good mechanical ventilation.

Making Sense of the Model Energy Code

Newly accessible thanks to user-friendly software, the Model Energy Code can help builders both design houses that qualify for federal financing and market their houses' energy efficiency.

Choosing a Heating System That Saves Energy

If winter heating bills set more records than freezing temperatures and snowfall, maybe it's time to replace or upgrade that inefficient heating system. Take a *Home Energy* guided tour of the choices before buying.

Off-Grid in a Cold City: The Alberta Sustainable Home

A new alternative home in Canada showcases energy and environmental features in every aspect of its construction and operation.

Volume 13, No. 3: May/June 1996

Water Heaters and Energy Conservation—Choices, Choices!

"What's the most energy-efficient water heater I can buy?" "What brand is the best?" "What heater features should I look for?" We get these questions all the time. The only quick answer is one of hydronics wizard Dan Holohan's favorite replies: "It depends."

Installing and Maintaining Evaporative Coolers

As warm weather comes upon us, many people in the western United States will be starting up or replacing evaporative coolers, or buying them for the first time. Proper installation or maintenance of these systems is very important, and recent improvements in the technology change how to best handle these tasks.

The Changing Marketplace: Recovering the Costs for Efficiency Services

"Customer pay" financing programs are being tested to replace traditional subsidized energy efficiency services in a deregulated marketplace.

Swimming Pools Soak Up the Sun

Solar pool heaters survived the boom and bust solar years of the 1970s and 1980s. Today they are even popular and cost-effective in parts of the country where many people think solar is impractical.

Volume 13, No. 4: July/August 1996

Clearing the Air: Filters for Residential Forced-Air Systems

As concern about indoor air quality increases, many people are equipping forced-air systems with more effective air cleaners than the standard panel filters. But the array of options is wide and filter effectiveness claims can be confusing.

What Drives Cooling Savings in Mobile Homes?

Much attention has been given to keeping mobile homes warm in winter, but most mobile homes are parked in hot climates where people are trying to stay cool.

New Pioneering in Straw Bale Building

Two hundred million tons of straw are wasted every year in the United States. Today, innovative builders are turning this waste into a versatile, cheap, superinsulating wall material.

Try These On for Size: New Guidelines for Multifamily Water Heating

ASHRAE has published new sizing guidelines for hot water systems in multifamily buildings. If adopted in practice, the new method should prevent the costly oversizing that is now common.

Volume 13, No. 5: September/October 1996

Sizing Air Conditioners: If Bigger is Not Better, What Is?

In this follow-up to the original "Bigger is Not Better" article, Proctor Engineering Group offers ways to improve comfort, reduce noise, and increase efficiency when installing home air conditioners.

Home Energy's *Consumer Guide to Insulation*

If you're considering insulating, here's a guide to help you decide where to insulate, how much to install, and what type of insulation to choose.

Putting Pressure on Building Codes

House Depressurization is a ubiquitous, dangerous problem. As regional mechanical codes move toward consolidation into one International Mechanical Code, now is the time to add a performance testing requirement for house depressurization.

Volume 13, No. 6: November/December 1996

Heat Pumps and Manufactured Homes: Making the Marriage Work

Manufactured homes make up over 7% of the U.S. housing stock, including over 15% of the homes in North Carolina. As more of these homes are being equipped with heat pumps, it becomes important to figure out how to make these systems efficient. A 1995 study in North Carolina found a variety of ways to do just that.

Out, Out Dammed Ice!

Ice dams cause millions of dollars of structural damage to houses every year, including water damage from roof leaks. There are many ways to treat the symptoms, but proper air sealing, insulation, and attic venting are the best ways to eliminate the problem.

Roofing and Siding Rehabs Get an Energy Fix

When it's time to replace worn siding and roof coverings, recognize the opportunity to upgrade energy performance. Here are several options for incorporating energy retrofits into roof and wood siding rehabs.

Do You Dig Ground Source Heat Pumps?

Ground source heat pumps are being aggressively marketed throughout the United States. Electric utilities love them, and manufacturers make some spectacular claims. But is hype and what is fact?

Constructive Restructuring: Weatherizers Get into the Act

To keep low-income weatherization and other energy efficiency programs alive, weatherization advocates must get involved in the utility restructuring debates.

Volume 14, No. 1: January/February 1997

Shedding Light on Home Lighting Use

The most extensive lighting monitoring study ever indicates that lights in living rooms, kitchens, and outdoors get the most use.

Florida House Aglow with Lighting Retrofit

In a residential lighting retrofit, how much energy can be saved with current technology? The Florida Solar Energy Center decided to find out by retrofitting every lamp in a Miami home.

Can a New Duct Test Take the Pressure?

A new method of duct testing can quickly measure leakage flow with just a digital manometer, a pressure pan, a blower door, and some newspaper. This method is being considered as a standard procedure by ASHRAE and some home energy rating systems.

Energy-Efficient Window Retrofits: Install with Care

Once the energy retrofitter has mastered the energy aspects of choosing a new window, it's time to focus on installing it correctly and ensuring that the window meets building codes.

Volume 14, No. 2: March/April 1997

Wall R-Values that Tell It Like It Is

There's a lot more to most walls than meets the eye, and the R-value of a whole wall can be considerably lower than the R-value of the insulation that fills it. At DOE's Buildings Technology Center, scientists have developed a system for measuring whole-wall R-value, and have already tested several types of wall system.

Chicago Apartments Get New Lease on Life

A rehab program in Chicago is turning abandoned in the city's poorest neighborhoods into energy-efficient affordable housing for low-income residents.

Sowing Conservation in Garden Apartments

Low-rise attached apartments pose different challenges for energy auditors than either single-family or large multifamily buildings. One project for a Pennsylvania housing authority shows some of the situations auditors may find.

State Energy Codes: An Uphill Battle

Energy codes have helped many states and counties to achieve higher efficiency in new construction. But builders and efficiency advocates continue to struggle over how and when to change these codes.

Volume 14, No. 3: May/June 1997

Remodeling with the Sun

Remodeling is the perfect time to improve daylighting, direct gain heating, and shading with passive solar techniques. It can also provide the best opportunity to add solar water heating or even photovoltaics to a home.

Carbon Monoxide Problems from New Furnaces

Several case studies from the Iowa State University extension show that carbon monoxide problems can occur even with new gas appliances. Proper installation and analysis are key to avoiding or solving these problems.

Can Better Utility Bills Save Energy?

Customer surveys by the University of Delaware show how various methods of displaying energy usage information get the message across.

Two-Stage Evaporative Cooling

Two-stage evaporative coolers operate at a fraction of the energy costs of conventional residential air conditioning and can keep a home comfortably cool when outside temperatures soar.

Data Loggers: An Interview with Some Heavy Users

Home Energy spoke with four experienced data logger users. Here, they offer tips and discuss pitfalls.

Volume 14, No. 4 July/August 1997

Air-to-Water Heat Pumps for the Home

Heat pumps dedicated to water heating can be cost-effective for single-family homes. Recent advances have also helped them find a niche in both hot and cold climates.

Creating an Energy Efficient Habitat

Habitat for Humanity is working to provide housing that is priced within reach of low-income buyers, is safe and durable, and has reasonable energy and maintenance costs.

Air-to-Water Heat Pumps for the Home

can a few water heating add-on components help you save energy and water?

Energy Conservation in Cohousing Communities

Cohousing developments are springing up across the country, raising new possibilities for energy and resource conservation.

Volume 14, No. 5: September/October 1997

Creating Windows of Energy-Saving Opportunity

Windows are where we often look to improve the energy performance in old homes. But don't rip out those old sashes yet. A field study in Vermont suggests that "remove and replace" is not necessarily the way to go when it comes to old windows.

Home Energy Rating Systems: Actual Usage May Vary

Home energy ratings attempt to predict typical energy costs for a given residence and estimate the savings potentials of various energy retrofits. But one question has gone unanswered: How accurate are these ratings at predicting actual energy consumption? A new analysis suggests the ratings could do better.

What's Being Built Out There? Performance Tests on 100 New Homes

There is a substantial gap between energy-efficient construction and what is currently being built. The problems range from lack of training to carelessness. But there are ways to cure the problems and bring best practices into widespread use.

Energy-10

There are many software packages available to evaluate residential energy conservation measures. Energy-10 is among the new generation of easy-to-use programs that have been helping architects and engineers evaluate the details of building energy use at every step in the design process.

Volume 14, No. 6: November/December 1997

SPECIAL HEALTH AND SAFETY SECTION

Working the Utility/Contractor Connection

Moving into increasing deregulation of utilities, home performance specialists, and utility companies alike wonder what their role in the new market will be. A project in New York State tests the water for partnerships between utilities and home performance contractors, with favorable results.

Sick Houses: Using Diagnostic Tools to Improve Indoor Air Quality

"Sick building syndrome" is caused by everything from dangerous molds to meteorological occurrences. Improving the indoor air quality of sick buildings calls for careful diagnostics and even more careful removal of and repairs to problem areas.

The Case of the CO Leak: Solving the Mysteries of Carbon Monoxide Exposure

Carbon monoxide causes more deaths from poisoning annually than any other substance, but diagnosing its source eludes all but the best-trained contractors.

Energy-Conscious Construction: Litigation Insurance?

Construction defects are annoying for homeowners, and bring on litigation that can wipe out builders. The design and construction techniques adopted by efficiency-minded builders in recent years may be one method of insuring a project against defects—and litigation.

Black Stains in Houses: Soot, Dust, or Ghosts?

Builders are never more surprised than when they walk into one of their newly built model homes and find black stains at wall-to-floor joints and on previously pristine carpeting underneath doorways. What causes these stains and how can builders and homeowners prevent them?

Energy Efficiency in the European Union

Encouraged by the European Union (EU) labeling scheme for energy-efficient appliances, manufacturers in Europe are bringing out lines of more efficient products that showcase new technologies. At last year's Domotechnica trade fair in Cologne, Germany, 1,700 companies from 52 countries turned out to strut their stuff.

Promoting Profitable Home Power

"Net metering" allows customers to link their solar or wind generators to the regular utility meter, running the meter backward when the customer generates more energy than the household can use, and forward again when the house needs to draw energy from the grid. State and federal governments love these programs but actual penetration is limited to a few dozen users in each area.

Pressure Pans: New Uses and Old Fundamentals

Pressure pans are often misused, and the information they provide can mislead the inexperienced. Bruce Manclark of Delta-T Incorporated and Jeffrey Siegel, formerly of Ecotope Incorporated, in Eugene, Oregon, investigate how mistakes are made, and share their research into one strategy for more accurate pan readings.

Volume 15, No. 1: January/February 1998

Black Stains in Houses: Soot, Dust, or Ghosts?

Builders are never more surprised than when they walk into one of their newly built model homes and find black stains at wall-to-floor joints and on previously pristine carpeting underneath doorways. What causes these stains and how can builders and homeowners prevent them?

Energy Efficiency in the European Union

Encouraged by the European Union (EU) labeling scheme for energy-efficient appliances, manufacturers in Europe are bringing out lines of more efficient products that showcase new technologies. At last year's Domotechnica trade fair in Cologne, Germany, 1,700 companies from 52 countries turned out to strut their stuff.

Promoting Profitable Home Power

"Net metering" allows customers to link their solar or wind generators to the regular utility meter, running the meter backward when the customer generates more energy than the household can use, and forward again when the house needs to draw energy from the grid. State and federal governments love these programs but actual penetration is limited to a few dozen users in each area.

Pressure Pans: New Uses and Old Fundamentals

Pressure pans are often misused, and the information they provide can mislead the inexperienced. Bruce Manclark of Delta-T Incorporated and Jeffrey Siegel, formerly of Ecotope Incorporated, in Eugene, Oregon, investigate how mistakes are made, and share their research into one strategy for more accurate pan readings.